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ABSTRACT

This paper describes the use of a computer in scheduling physical education classes and activities. The advantages of the computer are pointed out in terms of person hours of work saved for the school administrator. (JD)

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Computerized Schedule Construction in College and University Physical Education Departments

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Much has been written about the lack of interest among educators in applying computer technology to the problems which confront them. A myriad of reasons for this apathy exists. One of the most pervasive, however, is that educators are generally unaware of computers, and the implications which they might have for their area.

Physical Educators have generally shown a greater degree of interest in computer applications than many of their colleagues in other disciplines. This is particularly true in our research, where although our utilization of the computer may not have attained the degree of sophistication found in some of the sciences, its value has been firmly established. The potential which the computer may have as a tool for the administrator, however, has been less clearly defined.

Of the various ways in which educational administrators have used computers, scheduling has been one of the most common. This is particularly true in secondary schools, where flexible scheduling is experiencing steady growth. After studying two of the most popular computer programs which have been used in the implementation of flexible scheduling, I became interested in the possibilities which either of them might have in assisting the university physical education administrator with the task of constructing his master schedule for each term. Although some of the logic employed in these systems is pertinent, the physical education administrator is confronted with certain special problems which these programs are not equipped to handle. The expense involved in using these programs, and the loss of control which the administrator might experience, were also limiting factors.

In order to assess whether previous efforts had been made in this area, I contacted those four-year colleges and universities which according to the Electronic Data Processing Survey[1], were using the computer in some phase of master schedule construction. Of the 22 physical education department chairmen in those institutions that responded, only 9 indicated that the computer was employed for this purpose. In all cases the computer was used in the scheduling of students. It should be noted that Wiley[2] reported the utilization of the computer for this purpose to this organization in 1965. The only institution which had reported using the computer in assisting them in the performance of other administrative tasks was the University of Alberta, Canada. The respondent from this institution noted that in addition to scheduling students, their computer was also programmed to execute analysis routines which would reveal hours of peak loads, and the names of the most popular courses.

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[1] Electronic Data Processing Survey. Washington, D.C.: American Association of Collegiate Registrars and Admissions Officers, 1966-67, 36 pp.

[2] Roger C. Wiley, "The Feasibility of Machine Registration of the Men's Physical Education Basic Instruction Program," Proceedings: National College Physical Education Association for Men, p. 74, January, 1965.

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After additional investigation into computer programs that were being employed in the development of university-wide master time-tables, I concluded that computers on a large number of campuses have the storage capabilities that allow them to handle the large amount of information required in schedule construction. Further study of the logic which formed the basis for computer programs employed in industrial and transportation scheduling problems provided proof that the types of operations required to resolve the unique problems in physical education scheduling could be performed by the computer.

The computer program which I have developed was employed in the construction of the master schedule for the Department of Physical Education, at the University of Wyoming. Using this program to assist in the assignment of 118 courses to 32 instructors and 16 teaching stations, required approximately .5 of a minute of computer time, at a cost of $2.00 per run on the Xerox Data Systems Sigma 5 Computer, on the University of Wyoming campus. It was discovered that the execution of ten runs offered several optimal schedules, at a user cost of $50.00 or less. Thus, the cost for this operation was not excessive, particularly when one considers the saving in man-hours which resulted.

The program was written in the BASIC language, which is so fundamental, that is has been reported to have been used by 5th grade students in some elementary schools. An administrator could learn the information he would need to know about programming and the evaluation of trial schedules in an afternoon.

In comparing this system with earlier manual methods of construction, it was concluded that the computer offers a more rapid means of constructing master schedules, while considering a greater number of variables. Among the additional factors which the administrator was able to consider were the interests of faculty regarding their assignment to courses, and time preferences. Another advantage which met with unanimous approval of all physical educators was that teaching assignments could be made in a manner that precluded an excessive amount of uniform changes on the part of the instructor.

Although the program I have developed has some shortcomings, I believe I have established that the computer can be an effective tool for the administrator as he seeks to improve his scheduling abilities.